Package: rrricanes (via r-universe)

September 28, 2024

Type Package

Title Web Scraper for Atlantic and East Pacific Hurricanes and Tropical Storms

Description Get archived data of past and current hurricanes and tropical storms for the Atlantic and eastern Pacific oceans. Data is available for storms since 1998. Datasets are updated via the rrricanesdata package. Currently, this package is about 6MB of datasets. See the README or view `vignette(``drat")` for more information.

Version 0.2.0.6.10

Depends R (>= 4.1.0)

URL https://docs.ropensci.org/rrricanes
https://github.com/ropensci/rrricanes

BugReports https://github.com/ropensci/rrricanes/issues

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LazyData TRUE

ByteCompile TRUE

Imports broom (>= 0.5), crul (>= 0.7), curl (>= 3.3), dplyr (>= 0.8), ggplot2 (>= 3.1), iotools, httr (>= 1.4), lubridate (>= 1.7), purrr (>= 0.3), readr (>= 1.3), rlang (>= 0.3), rvest (>= 0.3), stringr (>= 1.4), tibble (>= 2.1), tidyr (>= 0.8), tidyselect (>= 0.2), xml2 (>= 1.2)

Suggests covr, devtools, here, knitr, rmarkdown, rnaturalearthdata (>= 0.1), sf (>= 1.0), sp, testthat

VignetteBuilder knitr

Encoding UTF-8

RoxygenNote 7.1.2

Repository https://ropensci.r-universe.dev

RemoteUrl https://github.com/ropensci/rrricanes

RemoteRef main

RemoteSha 67cda48829d87779dfd9a3e85e306dce03a91e46

Contents

`al_prblty_stations` *al_prblty_stations*

Description

Retrieve list of probability stations based in the Atlantic basin from the NHC. To be used in tandem with ‘wndprb‘ products.

Usage

```
al_prblty_stations()
```

Details

Originally it was believed this data source would be removed by the National Hurricane Center but it appears to have been updated. Additional columns have been added, one up front and three in the back. These columns all contain the same values each and I am unable to find documentation describing the values.

Regardless, the data is kept, just in case.

Warnings

Calling `al_prblty_stations` will generate a warning:

> "Expected 7 pieces. Additional pieces discarded in 1 rows [90]."

Station PATRICK AFB actually has eight columns. The data is kept for consistency; you decide if you want it or not.

al_tracking_chart *al_tracking_chart*

Description

Build tracking chart centered on Atlantic Basin.

Usage

```
al_tracking_chart(...)
```

Arguments

...	Additional parameters for tracking_chart and ggplot2

Value

ggplot2 object centered on Atlantic basin.

See Also

tracking_chart

Examples

```
## Not run:
# Build map with white land areas, thin black borders
al_tracking_chart(color = "black", size = 0.1, fill = "white")

# 50nm resolution, no states
al_tracking_chart(res = 50, states = FALSE, color = "black", size = 0.1,
          fill = "white")

# 50nm resolution, coastlines only
al_tracking_chart(countries = FALSE, res = 50, color = "black", size = 0.1,
          fill = "white")

# Adding and modifying with ggplot functions
al_tracking_chart(color = "black", size = 0.1, fill = "white") +
  ggplot2::labs(x = "Lon", y = "Lat",
  title = "Base Atlantic Tracking Chart")

## End(Not run)
```

cp_prblty_stations *cp_prblty_stations*

Description

Retrieve list of probability stations based in the central Pacific from the NHC. To be used in tandem with ‘wndprb‘ products.

Usage

```
cp_prblty_stations()
```

df.al_12_2005_prblty *Strike probabilities for Hurricane Katrina (AL122005)*

Description

Strike probabilities for Hurricane Katrina (AL122005)

Usage

```
df.al_12_2005_prblty
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 937 rows and 10 columns.

Source

http://www.nhc.noaa.gov/archive/2005/KATRINA.shtml?

df.al_18_2012 *Forecast/Advisory and Wind Speed Probabilities for Hurricane Sandy (AL182012)*

Description

Forecast/Advisory and Wind Speed Probabilities for Hurricane Sandy (AL182012)

Usage

```
df.al_18_2012
```

Format

An object of class `list` of length 2.

Source

http://www.nhc.noaa.gov/archive/2012/SANDY.shtml?

---

df.al_18_2012_fstadv *Forecast/Advisory for Hurricane Sandy (AL182012)*

Description

Forecast/Advisory for Hurricane Sandy (AL182012)

Usage

```
df.al_18_2012_fstadv
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 31 rows and 117 columns.

Source

http://www.nhc.noaa.gov/archive/2012/SANDY.shtml?

---

df.al_18_2012_wndprb *Wind speed probabilities for Hurricane Sandy (AL182012)*

Description

Wind speed probabilities for Hurricane Sandy (AL182012)

Usage

```
df.al_18_2012_wndprb
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 2227 rows and 18 columns.

Source

http://www.nhc.noaa.gov/archive/2012/SANDY.shtml?

df.al_2012 *Atlantic cyclones for 2012*

Description

Atlantic cyclones for 2012

Usage

```
df.al_2012
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 19 rows and 4 columns.

Source

http://www.nhc.noaa.gov/archive/2012/

df.gis_adv *GIS advisory dataset for Hurricane Sandy Adv 18*

Description

GIS advisory dataset for Hurricane Sandy Adv 18

Usage

```
df.gis_adv
```

Format

An object of class `list` of length 4.

Source

http://www.nhc.noaa.gov/gis/archive_forecast_results.php?id=al18&year=2012&name=Hurricane%20SANDY

df.gis_storm_surge *GIS storm surge shapefile dataset for Hurricane Sandy(AL182012)*

Description

GIS storm surge shapefile dataset for Hurricane Sandy(AL182012)

Usage

```
df.gis_storm_surge
```

Format

An object of class `list` of length 1.

Source

http://www.nhc.noaa.gov/gis/archive_psurge_results.php?id=al18&year=2012&name=Hurricane%20SANDY

df.gis_wind_radii *GIS windfield and forecast wind radii for Hurricane Sandy (AL182012)*

Description

GIS windfield and forecast wind radii for Hurricane Sandy (AL182012)

Usage

```
df.gis_wind_radii
```

Format

An object of class `list` of length 2.

Source

http://www.nhc.noaa.gov/gis/archive_forecast_info_results.php?id=al18&year=2012&name=Hurricane%20SANDY

df.gis_wsp *GIS wind speed probabilities for Hurricane Sandy (AL182012)*

Description

GIS wind speed probabilities for Hurricane Sandy (AL182012)

Usage

```
df.gis_wsp
```

Format

An object of class `list` of length 3.

Source

http://www.nhc.noaa.gov/gis/archive_wsp.php

ep_prblty_stations *ep_prblty_stations*

Description

Retrieve list of probability stations based in the eastern Pacific from the NHC. To be used in tandem with ‘wndprb‘ products.

Usage

```
ep_prblty_stations()
```

Details

Originally it was believed this data source would be removed by the National Hurricane Center but it appears to have been updated. Additional columns have been added, one up front and three in the back. These columns all contain the same values each and I am unable to find documentation describing the values.

Regardless, the data is kept, just in case.

Warnings

Calling `ep_prblty_stations` will generate a warning:

> "Expected 7 pieces. Missing pieces filled with ‘NA‘ in 1 rows [41]."

Station SALINA CRUZ actually has six columns.

ep_tracking_chart *ep_tracking_chart*

Description

Build tracking chart centered on northeast Pacific Basin.

Usage

```
ep_tracking_chart(...)
```

Arguments

...	Additional parameters for ggplot2

Value

ggplot2 object centered on northeast Pacific basin.

See Also

tracking_chart

Examples

```
## Not run:
# Build map with white land areas, thin black borders
ep_tracking_chart(color = "black", size = 0.1, fill = "white")

# 50nm resolution, no states
ep_tracking_chart(res = 50, states = FALSE, color = "black", size = 0.1,
          fill = "white")

# 50nm resolution, coastlines only
ep_tracking_chart(countries = FALSE, res = 50, color = "black", size = 0.1,
          fill = "white")

# Adding and modifying with ggplot functions
ep_tracking_chart(color = "black", size = 0.1, fill = "white") +
  ggplot2::labs(x = "Lon", y = "Lat",
  title = "Base East Pacific Tracking Chart")

## End(Not run)
```

get_discus *get_discus*

Description

Return dataframe of discussion data.

Status Classification of storm, e.g., Tropical Storm, Hurricane, etc.

Name Name of storm

Adv Advisory Number

DateTime Date of advisory issuance

StormKey ID of cyclone

Contents Text content of product

Usage

```
get_discus(links)
```

Arguments

links	URL to storm's archive page.

See Also

get_storms, public

Examples

```
## Not run:
# Return dataframe of storm discussions for Tropical Storm Alex (AL011998)
get_discus("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html")

## End(Not run)
```

get_fstadv *get_fstadv*

Description

Return dataframe of forecast/advisory data.

Usage

```
get_fstadv(links)
```

Arguments

links	URL to storms' archive page.

Details

Returns a wide dataframe of most the data available in a cyclones forecast/advisory product (watches and warnings are not included at this time).

Overall structure of the dataframe is listed below. Note the following clarifications:

1. The value of 'n' in 'Hr{n}' variables is the forecast period. Up to 2002, forecast periods are 12, 24, 36, 48 and 72 hours. After 2002, forecast periods were extended to 96 and 120 hours. Not all forecast periods will be available for every cyclone advisory (e.g., if it is dissipating or expected to dissipate.)
2. Wind radius data is not included 96 and 120 hour forecast periods.
3. Forecast dates are not truly 12, 24, ..., 120 hours from the date/time of the advisory. The NHC issues two positions in these products; one for current and one for three hours prior. It is the latter position the forecast date/times are based.

Status Classification of cyclone

Name Name of cyclone

Adv Advisory number

DateTime Date and time of advisory

StormKey Unique identifier of cyclone

Lat Latitude of cyclone center

Lon Longitude of cyclone center

Wind Maximum sustained one-minute winds in knots

Gust Maximum sustained one-minute gusts in knots

Pressure Minimum central pressure in millibars

PosAcc Position accuracy of cyclone in nautical miles

FwdDir Compass angle of forward motion

FwdSpeed Forward speed in miles per hour

Eye Size of eye in nautical miles

NE64 Radius of >=64kt winds in northeast quadrant

SE64 Radius of >=64kt winds in southeast quadrant

SW64 Radius of >=64kt winds in southwest quadrant

NW64 Radius of >=64kt winds in northwest quadrant

NE50 Radius of >=50kt winds in northeast quadrant

SE50 Radius of >=50kt winds in southeast quadrant

SW50 Radius of >=50kt winds in southwest quadrant

NW50 Radius of >=50kt winds in northwest quadrant

NE34 Radius of >=34kt winds in northwest quadrant

SE34 Radius of >=34kt winds in southeast quadrant

SW34 Radius of >=34kt winds in southwest quadrant

NW34 Radius of >=34kt winds in northwest quadrant

Hr{n}FcstDate Forecast valid date

Hr{n}Lat Forecast latitude in ‘n‘ hours

Hr{n}Lon Forecast longitude in ‘n‘ hours

Hr{n}Wind Forecast maximum wind in ‘n‘ hours

Hr{n}Gust Forecast maximum gust in ‘n‘ hours

Hr{n}NE64 Forecast wind radius in ‘n‘ hours

Hr{n}SE64 Forecast wind radius in ‘n‘ hours

Hr{n}SW64 Forecast wind radius in ‘n‘ hours

Hr{n}NW64 Forecast wind radius in ‘n‘ hours

Hr{n}NE50 Forecast wind radius in ‘n‘ hours

Hr{n}SE50 Forecast wind radius in ‘n‘ hours

Hr{n}SW50 Forecast wind radius in ‘n‘ hours

Hr{n}NW50 Forecast wind radius in ‘n‘ hours

Hr{n}NE34 Forecast wind radius in ‘n‘ hours

Hr{n}SE34 Forecast wind radius in ‘n‘ hours

Hr{n}SW34 Forecast wind radius in ‘n‘ hours

Hr{n}NW34 Forecast wind radius in ‘n‘ hours

SeasNE Radius of 12ft seas in northeast quadrant

SeasSE Radius of 12ft seas in southeast quadrant

SeasSW Radius of 12ft seas in southwest quadrant

SeasNW Radius of 12ft seas in northwest quadrant

See Also

tidy_adv, tidy_wr, tidy_fcst, tidy_fcst_wr

Examples

```
## Not run:
# Return dataframe of forecast/advisories for Tropical Storm Alex (AL011998)
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html")

## End(Not run)
```

get_ftp_storm_data *get_ftp_storm_data*

Description

Retrieve text products from the National Hurricane Center's FTP server. Not all products may exist for certain storms.

Usage

```
get_ftp_storm_data(
  stormid,
 products = c("discus", "fstadv", "posest", "public", "prblty", "update", "wndprb")
)
```

Arguments

stormid	A six-character alphanumeric string formatted as AABBCCCC where **AA** The basin of the storm; AL or EP **BB** Storm number for the year as decimal number (e.g., 01, 02, ..., 10, ...) **CCCC** Year with century)
products	Products to retrieve; discus, fstadv, posest, public, prblty, update, and windprb.

See Also

get_storm_data

get_posest *get_posest*

Description

Return dataframe of position estimate data.

Usage

```
get_posest(links)
```

Arguments

links	URL to storm's archive page.

Details

This product was discontinued after the 2013 hurricane season and is now included in the Tropical Cyclone Update product (update).

Status Classification of storm, e.g., Tropical Storm, Hurricane, etc.

Name Name of storm

DateTime Date of advisory issuance

Contents Text content of product

See Also

get_storms, posest

`get_prblty` *get_prblty*

Description

Strike probabilities; the chances of the center of a cyclone passing within 65 nautical miles of a location.

Status Classification of storm, e.g., Tropical Storm, Hurricane, etc.

Name Name of storm

Adv Advisory Number

Date Date of advisory issuance

Location Location for which the probability statistics rely

A Probability of a strike within the next 12 hours

B Probability of a strike between 12 and 24 hours

C Probability of a strike between 24 and 36 hours

D Probability of a strike between 36 and 48 hours

E Probability of a strike between 48 and 72 hours

Usage

```
get_prblty(links)
```

Arguments

`links`	URL to storm's archive page.

get_product_links *get_product_links*

Description

get_product_links

Usage

```
get_product_links(links, product)
```

Arguments

links	data frame containing Link that lists storm page urls
product	Data product

Value

vector of links for specific storm and product

get_public *get_public*

Description

Return dataframe of public advisory data.

Status Classification of storm, e.g., Tropical Storm, Hurricane, etc.

Name Name of storm

Adv Advisory Number

Date Date of advisory issuance

StormKey Unique ID of the cyclone

Contents Text content of product

Usage

```
get_public(links)
```

Arguments

links	URL to storm's archive page.

See Also

get_storms, public

get_serial_numbers *Get Serial Numbers*

Description

Creates the serial numbers look up

This will create a fresh table for serial numbers Since this is constantly updated it should be refreshed regularly especially when seeking recent tracks.

Usage

```
get_serial_numbers()
```

get_storms *get_storms*

Description

Returns storms and product link.

Usage

```
get_storms(years = format(Sys.Date(), "%Y"), basins = c("AL", "EP"))
```

Arguments

years	numeric or vector, four digits (%Y format)
basins	One or both of c("AL", "EP")

Format

A 4xN dataframe

Year Numeric, four-digit year of the storm

Name Character, name of storm mixed-case

Basin AL (Atlantic) or EP (East Pacific)

Link URL to storms' product pages

Details

By default returns all storms for the current year. If no storms have developed will return an empty dataframe.

Value

Dataframe of storms.

Source

http://www.nhc.noaa.gov/archive/2016/

Examples

```
# Default. Get all storms, both basins, for last year.
## Not run:
storms <- get_storms(year = 2016, basin = c("AL", "EP"))

# Get storms for two different years
storms.2010 <- get_storms(c(2010, 2015))

# Get storms for two consecutive years, Atlantic basin only
storms.al.2005 <- get_storms(2005:2007, basin = "AL")

## End(Not run)
```

---

get_storm_data *get_storm_data*

Description

Retrieve data from products.

Usage

```
get_storm_data(
  links,
 products = c("discus", "fstadv", "posest", "public", "prblty", "update", "wndprb")
)
```

Arguments

links	to storm's archive page.
products	Products to retrieve; discus, fstadv, posest, public, prblty, update, and windprb.

Details

get_storm_data is a wrapper function to make it more convenient to access the various storm products.

Types of products:

discus Storm Discussions. This is technical information on the cyclone such as satellite presentation, forecast model evaluation, etc.

fstadv Forecast/Advisory. These products contain the meat of an advisory package. Current storm information is available as well as structural design and forecast data.

posest Position Estimate. Issued generally when a storm is threatening; provides a brief update on location and winds.

public Public Advisory. Issued for public knowledge; more often for Atlantic than East Pacific storms. Contains general information.

prblty Strike Probability. Discontinued after the 2005 hurricane season, strike probabilities list the chances of x-force winds in a particular city.

update Cyclone Update. Generally issued when a significant change occurs in the cyclone.

windprb Wind Probability. Replace strike probabilities beginning in the 2006 season. Nearly identical.

Progress bars are displayed by default. Additionally, you can display messages for each advisory being worked by setting the rrricanes.working_msg to TRUE.

Value

list of dataframes for each of the products.

See Also

get_ftp_storm_data

Examples

```
## Not run:
## Get public advisories for first storm of 2016 Atlantic season.
#get_storms(year = 2016, basin = "AL") |>
 # dplyr::slice(1) |>
 # pull(Link) |>
 # get_storm_data( products = "public")
## Get public advisories and storm discussions for first storm of 2017
Atlantic season.
# get_storms(year = 2017, basin = "AL") |>
#  slice(1) |>
 # pull(Link) |>
  # get_storm_data(products = c("discus", "public"))

## End(Not run)
```

---

get_storm_list *get_storm_list*

Description

Get storm list

Usage

```
get_storm_list()
```

get_storm_track *get_storm_track*

Description

get_storm_track

Usage

```
get_storm_track(
  serials,
 source = c("ACTIVE", "last3years", "since1980", "ALL", "EP", "NA", "NI", "SA", "SI",
    "SP", "WP")
)
```

Arguments

serials	vector of serial numbers for a storm
source	Short name for source, allows use of smaller file.

Value

data frame of storm track

get_update *get_update*

Description

Return dataframe of cyclone update data.

Status Classification of storm, e.g., Tropical Storm, Hurricane, etc.

Name Name of storm

Date Date of advisory issuance

Key Unique ID of cyclone

Contents Text content of product

Usage

```
get_update(links)
```

Arguments

links	URL to storm's archive page.

See Also

get_storms, update

`get_url_contents` *get_url_contents*

Description

Get contents from URL

Usage

```
get_url_contents(links)
```

Arguments

`links`	character vector of URLs to download

Details

This function primarily is reserved for extracting the contents of the individual products (thought it can be used in other instances). Often, there are timeout issues. This is an attempt to try to work around that.

`get_wndprb` *get_wndprb*

Description

Return dataframe of wind speed probability data.

Usage

```
get_wndprb(links)
```

Arguments

`links`	URL to storm's archive page.

Details

Wind Speed Probability product replaced Strike Probabilities product after the 2005 hurricane season. These products may not be issued for every advisory/cyclone.

Status Classification of storm, e.g., Tropical Storm, Hurricane, etc.

Name Name of storm

Adv Advisory Number

Date Date of advisory issuance

Wind Minimum wind speed for which probabilities reference

Wind12 Probability of sustained 'Wind' within 12 hours

Wind24 Probability of sustained 'Wind' within 24 hours

Wind24Cum Cumulative probability through 24 hours

Wind36 Probability of sustained 'Wind' within 36 hours

Wind36Cum Cumulative probability through 36 hours

Wind48 Probability of sustained 'Wind' within 48 hours

Wind48Cum Cumulative probability through 48 hours

Wind72 Probability of sustained 'Wind' within 72 hours

Wind72Cum Cumulative probability through 72 hours

Wind96 Probability of sustained 'Wind' within 96 hours

Wind96Cum Cumulative probability through 96 hours

Wind120 Probability of sustained 'Wind' within 120 hours

Wind120Cum Cumulative probability through 120 hours

Value

Data frame of wndprb information

Source

http://www.nhc.noaa.gov/about/pdf/About_Windspeed_Probabilities.pdf

---

`gis_advisory` *gis_advisory*

Description

Advisory Forecast Track, Cone of Uncertainty, and Watches/Warnings

Usage

```
gis_advisory(key, advisory = as.character())
```

Arguments

key	Key of storm (i.e., AL012008, EP092015)
advisory	Advisory number. If NULL, all advisories are returned. Intermediate advisories are acceptable.

See Also

gis_download

---

gis_breakpoints *gis_breakpoints*

Description

Return link to breakpoints shapefile by year

Usage

```
gis_breakpoints()
```

Details

Coastal areas placed under tropical storm and hurricane watches and warnings are identified through the use of "breakpoints." A tropical cyclone breakpoint is defined as an agreed upon coastal location that can be chosen as one of two specific end points or designated places between which a tropical storm/hurricane watch/warning is in effect. The U.S. National Weather Service designates the locations along the U.S. East, Gulf, and California coasts, Puerto Rico, and Hawaii. These points are listed in NWS Directive 10-605 (PDF). Individual countries across the Caribbean, Central America, and South America provide coastal locations for their areas of responsibility to the U.S. National Weather Service for the National Hurricane Center's use in tropical cyclone advisories when watches/warnings are issued by international partners. The National Hurricane Center maintains a list of pre-arranged breakpoints for the U.S. Atlantic and Gulf coasts, Mexico, Cuba and the Bahamas. Other sites are unofficial and sites not on the list can be selected if conditions warrant.

---

gis_download *gis_download*

Description

Get GIS data for storm.

Usage

```
gis_download(url, ...)
```

Arguments

`url`	link to GIS dataset to download.
`...`	additional parameters for simple features

---

gis_latest *gis_latest*

Description

Latest GIS datasets for **active** cyclones

Usage

```
gis_latest(basins = c("AL", "EP"), ...)
```

Arguments

`basins`	AL and/or EP.
`...`	additional parameters for sf::st_read()

---

gis_outlook *gis_outlook*

Description

Tropical Weather Outlook

Usage

```
gis_outlook()
```

See Also

`gis_download`

gis_prob_storm_surge *gis_prob_storm_surge*

Description

Probabilistic Storm Surge

Usage

```
gis_prob_storm_surge(key, products, datetime = NULL)
```

Arguments

key	Key of storm (i.e., AL012008, EP092015)
products	list of products and associated n values; psurge (0:20) or esurge (10, 20, 30, 40, 50).
datetime	Datetime in %Y%m%d%H format.

Details

Probabilistic Storm Surge Forecasts

Products

esurge The Tropical Cyclone Storm Surge Exceedances (P-Surge 2.5) data shows the probability, in percent, of a specified storm surge, including tides, exceeding the specified height, in feet, during the forecast period indicated. The 10 percent exceedance height, for example, is the storm surge height, including tides, above ground level (AGL) such that there is a 10 percent chance of exceeding it. The product is based upon an ensemble of Sea, Lake,and Overland Surge from Hurricanes (SLOSH) model runs using the National Hurricane Center (NHC) official advisory and accounts for track, size, and intensity errors based on historical errors and astronomical tide. Valid values are 10, 20, 30, 40 or 50.

psurge The Tropical Cyclone Storm Surge Probabilities (P-Surge 2.5) data shows the probability, in percent, of a specified storm surge occurring during the forecast period indicated. The product is based upon an ensemble of Sea, Lake, and Overland Surge from Hurricanes (SLOSH) model runs using the National Hurricane Center(NHC) official advisory and accounts for track, size, and intensity errors based on historical errors and astronomical tide. Valid values are 0:20.

See Also

Tropical Cyclone Storm Surge Probabilities

gis_download

Examples

```
## Not run:
# Return the last psurge0 product for storm AL092016
gis_prob_storm_surge("AL092016", products = list("psurge" = 0))

# Return the psurge0 and esurge10 products for storm AL092016
gis_prob_storm_surge("AL092016", products = list("psurge" = 0, "esurge" = 1
0))

# Return all psurge0 products for Sep 2, 2016, storm AL092016
gis_prob_storm_surge("AL092016", products = list("psurge" = 0),
           datetime = "20160902")

## End(Not run)
```

`gis_storm_surge_flood` *gis_storm_surge_flood*

Description

Potential Storm Surge Flooding (Inundation)

Usage

```
gis_storm_surge_flood(
  key,
  advisory = as.numeric(),
  products = c("inundation", "tidalmask")
)
```

Arguments

`key`	Key of storm (i.e., AL012008, EP092015)
`advisory`	Advisory number.
`products`	indundation or tidalmask

See Also

`gis_download`

gis_windfield *gis_windfield*

Description

Advisory Wind Field and Forecast Wind Radii

Usage

```
gis_windfield(key, advisory = as.character())
```

Arguments

key	Key of storm (i.e., AL012008, EP092015)
advisory	Advisory number. If NULL, all advisories are returned. Intermediate advisories are acceptable.

Details

Tropical Cyclone Advisory Wind Field http://www.nhc.noaa.gov/gis/archive_forecast_info_results.php?id=al14&year=2016 http://www.nhc.noaa.gov/gis/forecast/archive/ Example file name: al012017_fcst_001.zip [basin]2[year_num]2[year]4_fcst_[advisory]3.zip Many storms do not appear to have this data; especially earlier.

Not all advisories will be available for storms. For example, Hurricane Matthew (AL142016) is missing several advisories.

See Also

gis_download

gis_wsp *gis_wsp*

Description

Wind Speed Probabilities

Usage

```
gis_wsp(datetime, res = c(5, 0.5, 0.1))
```

Arguments

datetime	Datetime in %Y%m%d%H format. %m, %d and %H are optional but will return more datasets.
res	Resolution as a numeric vector; 5, 0.5, 0.1.

Details

Probability winds affecting an area within a forecast period. Datasets contain windfields for 34kt, 50kt and 64kt. Resolution is at 5km, 0.5 degrees and 0.1 degrees. Not all resolutions may be available for all storms. Not all windfields will be available for all advisories.

See Also

gis_download

Examples

```
## Not run:
# Return datasets for January 1, 2016 with resolution of 0.5 degrees
gis_wsp("20160101", res = 0.5)

# Return wsp of 0.1 and 0.5 degree resolution, July, 2015
gis_wsp("201507", res = c(0.5, 0.1))

## End(Not run)
```

---

knots_to_mph *knots_to_mph*

Description

convert knots (kt) to miles per hour (mph)

Usage

```
knots_to_mph(x)
```

Arguments

x	wind speed in knots

Value

x in miles per hour

Examples

```
knots_to_mph(65)
```

mb_to_in *mb_to_in*

Description

convert millibars (mb) to inches of mercury (in)

Usage

```
mb_to_in(x)
```

Arguments

x	barometric pressure in mb

Value

x in inches

Examples

```
mb_to_in(999)
```

nm_to_sm *nm_to_sm*

Description

Convert nautical miles to survey miles

Usage

```
nm_to_sm(x)
```

Arguments

x	Nautical miles

Examples

```
nm_to_sm(c(50, 100, 150))
```

rrricanes *rrricanes*

Description

rrricanes is a web-scraping library for R designed to deliver hurricane data (past and current) into well-organized datasets. With these datasets you can explore past hurricane tracks, forecasts and structure elements.

This documentation and additional help articles can be found online.

Text products (Forecast/Advisory, Public Advisory, Discussions and Probabilities) are only available from 1998 to current. An effort will be made to add prior data as available.

Getting Storms

List all storms that have developed by year and basin. Year must be in a four-digit format (%Y) and no earlier than 1998. Basin can be one or both of Atlantic ("AL") or East Pacific ("EP").

`get_storms` List all storms by year, basin

Getting Storm Data

`get_storm_data` can be used to select multiple products, multiple storms and from multiple basins.

Additional text products are:

`get_discus` Storm Discussions

`get_fstadv` Forecast/Advisory. These products contain a bulk of the information for tropical cyclones including current position, structure, forecast position and forecast structure.

`get_posest` Position Estimates. Rare and used generally for threatening cyclones. This product was discontinued after the 2013 season and is now issued as `get_update`.

`get_prblty` Strike Probabilities. Show the probability of the center of a cyclone passing within 65nm of a location for a given forecast period. This product was discontinued after 2005, replaced with `get_wndprb`.

`get_public` Public Advisory. General non-structured information exists in these products.

`get_update` Updates. Generally issued when a cyclone undergoes a sudden change that requires immediate notice.

`get_wndprb` Wind Speed Probability. Lists the probability of a location experiencing a minimum of 35kt, 50kt or 64kt winds for an alotted forecast period or accumulated probability. This product replaced `get_prblty` after the 2005 season.

The products above may take some time to load if the NHC website is slow (as is often the case, unfortunately). For all storm advisories issued outside of the current month, use the `rrricanesdata` package.

To install `rrricanesdata`, run

```
install.packages("rrricanesdata", repos = "https://timtrice.github.io/drat/", type = "source")
```

See `vignette("installing_rrricanesdata", package = "rrricanes")` for more information.

GIS Data

For enhanced plotting of storm data, several GIS datasets are available. The core GIS functions return URLs to help you refine the data you wish to view. (Some products will not exist for all storms/advisories). These products are:

`gis_advisory` Past track, current position, forecast and wind radii

`gis_breakpoints` Breakpoints for watches and warnings

`gis_latest` All available GIS products for active cyclones

`gis_outlook` Tropical Weather Outlook

`gis_prob_storm_surge` Probabilistic Storm Surge

`gis_windfield` Wind Radii

`gis_wsp` Wind Speed Probabilities

`gis_download` will download the datasets from the above functions.

Some GIS datasets will need to be converted to dataframes to plot geoms. Use `shp_to_df` to convert SpatialLinesDataFrames and SpatialPolygonsDataFrames. SpatialPointsDataFrames can be converted using `tibble::as_data_frame` targeting the @data object.

Package Options

In `get_storms`, the progress bar is based on the number of years being requested. In the product functions (i.e., `get_fstadv`) it is based on the number of advisories. It can be misleading when calling `get_storm_data` because it shows the progress of working through a storm's product advisories but will reset on new products/storms.

product datasets. In `get_storms`, the progress bar is based on the number of years being requested. In the product functions (i.e., `get_fstadv`) it is based on the number of advisories. It can be misleading when calling `get_storm_data` because it shows the progress of working through a storm's product advisories but will reset on new products/storms.

`rrricanes.working_msg` is set to FALSE by default. When TRUE, it will list the current storm, advisory and date being worked.

`saffir` *saffir*

Description

Return category of tropical cyclone based on wind. Saffir- Simpson Hurricane Scale does not apply to non-tropical cyclones.

Usage

```
saffir(x)
```

Arguments

x	Vector of wind speed values.

Examples

```
saffir(c(32, 45, 70, 90, 110, 125, 140))
```

---

shp_to_df *shp_to_df*

Description

Convert shapefile object to dataframe

Usage

```
shp_to_df(obj)
```

Arguments

obj	Spatial object to convert. See details.

Details

Takes a SpatialLinesDataFrame object or SpatialPolygonsDataFrame object and converts into a dataframe that can be plotted in ggplot2.

---

status_abbr_to_str *status_abbr_to_str*

Description

Convert Status abbreviation to string

Usage

```
status_abbr_to_str(x)
```

Arguments

x	character vector of status abbreviations

Details

Status abbreviations

DB Disturbance (of any intensity)

EX Extratropical cyclone (of any intensity)

HU Tropical cyclone of hurricane intensity (> 64 knots)

LO A low that is neither a tropical cyclone, a subtropical cyclone, nor an extratropical cyclone (of any intensity)

SD Subtropical cyclone of subtropical depression intensity (< 34 knots)

SS Subtropical cyclone of subtropical storm intensity (> 34 knots)

TD Tropical cyclone of tropical depression intensity (< 34 knots)

TS Tropical cyclone of tropical storm intensity (34-63 knots)

WV Tropical Wave (of any intensity)

Value

character vector of strings

See Also

http://www.aoml.noaa.gov/hrd/hurdat/newhurdat-format.pdf

Examples

```
# Extratropical Cyclone
status_abbr_to_str("EX")

# Hurricane
status_abbr_to_str("HU")
```

---

tidy_adv *tidy_adv*

Description

Tidy current details of a fstadv dataframe object.

`tidy_adv` will be deprecated in 0.2.2

Usage

```
tidy_adv(df)

tidy_fstadv(df)
```

Arguments

df	fstadv dataframe object

Details

Returns current data only of a fstadv dataframe. Use Key, Adv and Date to join with other tidy dataframes.

StormKey Unique identifier of cyclone

Adv Advisory number

Date Date and time of advisory

Status Classification of cyclone

Name Name of cyclone

Lat Latitude of cyclone center

Lon Longitude of cyclone center

Wind Maximum sustained one-minute winds in knots

Gust Maximum sustained one-minute gusts in knots

Pressure Minimum central pressure in millibars

PosAcc Position accuracy of cyclone in nautical miles

FwdDir Compass angle of forward motion

FwdSpeed Forward speed in miles per hour

Eye Size of eye in nautical miles

SeasNE Radius of 12ft seas in northeast quadrant

SeasSE Radius of 12ft seas in southeast quadrant

SeasSW Radius of 12ft seas in southwest quadrant

SeasNW Radius of 12ft seas in northwest quadrant

Examples

```
## Not run:
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>
  tidy_adv()

## End(Not run)
```

tidy_fcst *tidy_fcst*

Description

Tidy forecasts of a fstadv dataframe object.

Usage

```
tidy_fcst(df)
```

Arguments

df	fstadv dataframe object

Details

Gathers all forecast points, tidies dataframe to make one row per forecast position. Complete cases only. Use Key, Adv and Date to join with other tidy dataframes.

Key Unique identifier of cyclone

Adv Advisory number

Date Date and time of advisory

FcstDate Forecast date and time in UTC

Lat Forecast latitude

Lon Forecast Longitude

Wind Forecast wind in knots

Gust Forecast gust in knots

Examples

```
## Not run:
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>
  tidy_fcst()

## End(Not run)
```

`tidy_fcst_wr` *tidy_fcst_wr*

Description

Tidy forecast wind radii of a fstadv dataframe object

Usage

```
tidy_fcst_wr(df)
```

Arguments

`df`	fstadv dataframe object

Details

Tidies forecast wind radius for each forecast position. Complete cases only (by quadrants). Use Key, Adv and Date to join with other tidy dataframes.

StormKey Unique identifier of cyclone

Adv Advisory number

Date Date and time of advisory

FcstDate Forecast date and time in UTC

WindField Minimum sustained wind field for quadrants

NE Radius in nautical miles for northeast quadrant

SE Radius in nautical miles for southeast quadrant

SW Radius in nautical miles for southwest quadrant

NW Radius in nautical miles for northwest quadrant

Examples

```
## Not run:
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>
  tidy_fcst_wr()

## End(Not run)
```

tidy_wr *tidy_wr*

Description

Tidy current wind radius of a fstadv dataframe object.

Usage

```
tidy_wr(df)
```

Arguments

df	fstadv dataframe object

Details

Returns tidy dataframe of current wind radius values for a cyclone. Returns only complete.cases (based on quadrants).

StormKey Unique identifier of cyclone

Adv Advisory number

Date Date and time of advisory

Windfield Minimum wind speed expected

NE Radius of 'Windfield' in the northeast quadrant

SE Radius of 'Windfield' in the southeast quadrant

SW Radius of 'Windfield' in the southwest quadrant

NW Radius of 'Windfield' in the northwest quadrant

Examples

```
## Not run:
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>
  tidy_wr()

## End(Not run)
```

tracking_chart *tracking_chart*

Description

Build base tracking chart using ggplot

Usage

```
tracking_chart(countries = TRUE, states = TRUE, res = 110, ...)
```

Arguments

countries	Show country borders. Default TRUE.
states	Show state boundaries. Default TRUE. Ignored if 'countries' is FALSE.
res	Resolution of charts; 110 (1:110m), 50 (1:50m), 10 (1:10m). Default is low. The higher the resolution, the longer the plot takes to appear.
...	Additional ggplot2::aes parameters

Value

Returns ggplot2 object that can be printed directly or have new layers added.

See Also

aes

Examples

```
## Not run:
# Build map with white land areas, thin black borders
tracking_chart(color = "black", size = 0.1, fill = "white")

# 50nm resolution, no states
tracking_chart(res = 50, states = FALSE, color = "black", size = 0.1,
       fill = "white")

# 50nm resolution, coastlines only
tracking_chart(countries = FALSE, res = 50, color = "black", size = 0.1,
       fill = "white")

# Adding and modifying with ggplot functions
tracking_chart(color = "black", size = 0.1, fill = "white") +
  ggplot2::labs(x = "Lon", y = "Lat", title = "Base Tracking Chart")

## End(Not run)
```

`twoal` *twoal*

Description

Atlantic Tropical Weather Outlook

Usage

```
twoal()
```

Details

This function parses the latest xml tropical weather outlook for the Atlantic ocean. The core data is located in the ‘channel$item‘ element where ‘title‘, ‘description‘ and ‘pubDate‘ reside. ‘link‘ is also available to point to the NHC website.

`twoep` *twoep*

Description

East Pacific Tropical Weather Outlook

Usage

```
twoep()
```

Details

This function parses the latest xml tropical weather outlook for the east Pacific. The core data is located in the ‘channel$item‘ element where ‘title‘, ‘description‘ and ‘pubDate‘ reside. ‘link‘ is also available to point to the NHC website.

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